DOCUMENT RESUME

ED 184 045 CG 014 336

AUTHOR Atkinson, Donald R.; And Others
TITLE Effects of Reactive Expectation and Cumulative Charting on Self-Monitoring Study Behavior.
PUB DATE [76]
NOTE 14p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *Behavior Modification; Behavior Patterns; *College Students; *Expectation; Graphs; Higher Education; Intervention; Research Projects; Responses; *Self Evaluation (Individuals); *Student Motivation; *Study Skills; Undergraduate Students

ABSTRACT

Subjects were 46 undergraduates attending a major West Coast university who self-monitored their study behavior for four weeks under one of four conditions: (1) expectation of reactivity; (2) cumulative charting, (3) combined expectation and charting; and (4) control group (given no expectation or cumulative chart). Although definitive conclusions can not be made since the conventional level of significance (.05) was approached but not surpassed, trends in the data suggest a short-term charting effect and a long-term expectation effect. Possible sources of error variance and suggestions for future research are presented. (Author)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED184045

EFFECTS OF REACTIVE EXPECTATION AND CUMULATIVE CHARTING ON SELF-MONITORING STUDY BEHAVIOR

Donald R. Atkinson
University of California, Santa Barbara

Greg Ketchum
California School of Professional Psychology

Mike Furlong
University of California, Santa Barbara

CG 014336

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Donald Atkinson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EFFECTS OF REACTIVE EXPECTATION AND CUMULATIVE CHARTING ON SELF-MONITORING STUDY BEHAVIOR

A considerable amount of research in the past decade has focused on the use of self-monitoring, both as a means of assessing the frequencies of naturally occurring behaviors and as a means of directly altering maladaptive behaviors (Lipinski, Black, Nelson, & Ciminero, 1975). The value of self-recording as a behavioral intervention has been confirmed with a wide variety of behaviors such as smoking (Kantorowitz, Walters, & Pezdek, 1978; Lipinski et al., 1975; McFall & Hammen, 1971; McFall, 1970) face touching (Lipinski et al., 1975; Lipinski & Nelson, 1974), attending (Herbert & Baer, 1972), class participation (Gottman & McFall, 1972), nail biting (McNamara, 1974), and scholastic achievement (Groveman, 1975; Johnson & White, 1971; Olson, 1974). In addition, an impressive quantity of research has documented that self-monitoring can be used effectively to increase study behavior (Broden, Hall, & Mitts, 1971; Groveman, 1975; Johnson & White, 1971; Mahoney, Moore, Wade, & Moura, 1973; Richards, 1975; Richards, McReynolds, Holt, & Sexton, 1976).

There is some evidence that the efficacy of self-monitoring as an intervention can be enhanced or diminished through the appropriate use of instructions (McFall, 1970) and by designing feedback mechanisms into the self-recording schedule itself (Mahoney et al., 1973). The purpose of the present study was to determine if a reactive expectation in the instructions and a cumulative chart in the self-monitoring schedule enhances the reactivity of self-monitoring. It was hypothesized that those subjects who were assured during the administration of the self-monitoring instructions that self-monitoring study behavior could improve their grades would engage in more study behavior than those not offered such an assurance. A second hypothesis

predicted that subjects who maintained a cumulative chart of their study behavior over the four weeks of the experiment would devote more time to studying than those who recorded their behavior on a daily basis only.

Method

Subjects

Subjects were the first 48 undergraduates who responded to an advertisement in a major West-Coast university newspaper that offered "spending money" for participation in a study of "student behavior" and who agreed to adhere to the conditions of the study described below. Two subjects stopped participating late in the experiment, leaving a total of 46 subjects who took part in the entire experiment. Twenty-four of the subjects who completed the entire study were males and 22 were females. The subjects were fairly representative of all four years of college (freshman = 10, sophomore = 13, junior = 12, senior = 10; one subject did not indicate grade level).

Procedure

Subjects were randomly assigned to one of four treatment conditions (generated by crossing two levels of reactive expectancy and two levels of cumulative charting) and then met individually with a confederate of the authors to receive written and verbal instructions. The confederate, who was unaware of the hypotheses being tested, gave each subject 28 pre-addressed post cards on which to record daily study behavior and informed each subject that he/she would receive 25¢ for every card returned daily during the four weeks of the study. The confederate stressed that the accuracy and consistency of the daily reports were more important than the total amount of time recorded. Study behavior was defined in writing for the subjects as follows:

> "...reading or skimming assigned or recommended texts, journal articles, or other related reading materials, writing essays or completing any class assignments, taking notes on assigned or recommended readings and reviewing subject matter for any class. Actual time spent in class is not to be counted as study time."

One group of 12 subjects received no further instructions (control group), but were advised they would be contacted after four weeks for exit interviews and to receive payment for the post cards they returned. A second group of 12 subjects received the same set of basic instructions as the control group but, in addition, were provided with a graph on which to keep their own cumulative record of study behavior over the four-week period (cumulative charting only group). A third group of 11 subjects received the same set of basic instructions as the control group but, in addition, were read and provided with a written copy of the following statement (reactive expectation only group):

> You may be interested to know that the process of observing and recording your own behavior has been shown in experimental studies to affect the behavior being observed. For example, in a study by Broden, Hall & Mitts, 1971, this self-observation process increased an 8th grade girl's study behavior, and in a study in 1971 by Johnson & White, the weekly grades of students in a psychology course were found to improve as a result of self-observation.

The conditions of the fourth group combined treatments given groups 2 and 3; these 11 subjects were given the reactive expectation statement and were

requested to keep a cumulative chart of their study behaviors (reactive expectation plus cumulative charting group).

At the conclusion of the four-week experimental period, 39 (84.8 percent) of the students had completed and returned all 28 of their daily post card reports, six (13.0 percent) returned a minimum of 26 daily reports, and one student returned 19 daily reports. To avoid misleading error variance in the analysis due to incomplete data for seven of the students, the mean daily reported study times for each of the four weeks and across all four weeks were used as the dependent measures in the analysis that follows.

Results

A 2 X 2 X 4 (expectancy condition x charting condition x weeks of the study) profile analysis of variance (Greenhouse & Geisser, 1959) was computed to determine the relative and interactive effects of charting and reactive expectation on the reported study time of the students. As reported in Table 1, the main effect for the expectation condition (B) across the four weeks of the study narrowly missed reaching the accepted level of significance of .05 ($p = .053$). The charting effect (A) was not found to be significant and there was no interaction effect. In addition, the pattern of weekly reported study time across all four groups (C) was not significant and there were no interactions between groups and weekly study time. In brief, the profile analysis demonstrated that there was a sizable effect for the expectation condition when differences between mean aggregate study times across the four weeks of the study were tested (i.e., the equivalent of a one-way Anova comparing the four experimental groups' mean daily study time across all four weeks), but that the patterns of study time from week-to-week were not found to be significantly related to any of the independent variables.

An examination of the mean daily study time for each of the four weeks reported in Figure 1 reveals that during the first week of the study both charting groups reported more study time than either the reactive expectation only or control groups. During weeks 2 through 4, however, both expectation groups reported more study time than either the charting only or control groups. The students in the reactive expectation plus cumulative charting group reported the highest mean daily study time for all four weeks and their averages for each week reflect a steady increase.

Discussion

Although conventional research decision-making policy does not allow rejection of the null hypotheses for either the reactive expectation or charting conditions, this study indicates that the expectation of reactivity may have an effect. Some evidence was found that the maintenance of a cumulative chart may enhance the effectiveness of self-monitoring initially and that the combination of a reactive expectation in the instructions and cumulative charting in the self-monitoring procedure may be more effective than either treatment alone. Due to the tenuous confidence the present study provides for these conclusions, more definitive statements concerning the effectiveness of a reactive expectation and cumulative charting in self-monitoring must await further investigation. This should not be viewed by college counselors as cause for by-passing statements of treatment reactivity and as cause for eliminating cumulative charts when implementing self-monitoring procedures. It simply means that we cannot completely reject the possibility that differences in means observed in Figure 1 are due to chance.

Variances within each group in the present study were quite large (S.D. range for mean daily study time = 55.6 - 74.2 minutes) and suggest that a number of factors other than those examined in the present study may have

been operating. Several authors have suggested that motivational factors other than cumulative feedback need to be researched, such as self-administered consequences (Kanfer & Karoly, 1972), feedback from an external source (Locke, Cartledge, & Koeppel, 1968), goal-setting and response desirability (Kazdin, 1974). These factors may have been operating on individuals within each group in the present study to varying degrees. Furthermore, the present study was conducted during the first four weeks of an academic term, a time when study behavior may be more sporadic for many individuals than it is near the end of the term. Future researchers might attempt to control for self-administered consequences, external feedback, and goal setting in their research designs and enhance response desirability for all subjects by examining effects near the end of an academic term.

Future studies might also attempt to verify the validity of self-reports and daily use of cumulative charts, perhaps by employing peers as data validators. The issue of how valid are self-reports of time spent studying, however, is a particularly sticky one. Even if a researcher can achieve the ideal, but highly unlikely, condition of having observers present throughout that period of their subjects' day when they are awake, there is no way of ensuring that sitting in front of a book, for instance, really involves studying. It seems quite inevitable that at some point, short of monitoring brain wave activity, the researcher must confirm with the individual subjects involved whether or not s/he was actually studying during a given period of time.

REFERENCES

Broden, M., Hall, R.V., & Mitts, B. The effect of self-recording on the classroom behavior of two eighth-grade students. Journal of Applied Behavior Analysis, 1971, 4, 191-199.

Gottman, J.M., & McFall, R.M. Self-monitoring effects in a program for potential high school dropouts: A time-series analysis. Journal of Consulting and Clinical Psychology, 1972, 39, 273-281.

Greenhouse, S.W., & Geisser, S. On methods in the analysis of profile data. Psychometrika, 1959, 24, 95-112.

Groveman, A.M. The effects of study skills counseling and behavioral self-control methods on the academic performance of college students (Doctoral dissertation, University of Missouri, 1975). Dissertation Abstracts International, 1976, 36a, 6471. (University Microfilms No. 76-7497).

Herbert, E.W., & Baer, D.M. Training parents as behavior modifiers: Self-recording of contingent attention. Journal of Applied Behavior Analysis, 1972, 5, 139-149.

Johnson, S.M., & White, G. Self-observation as an agent of behavioral change. Behavior therapy, 1971, 2, 488-497.

Kanfer, F.H., & Karoly, P. Self control: A behavioristic excursion into the lion's den. Behavior Therapy, 1972, 3, 398-416.

Kantorowitz, D.A., Walters, J., & Pezdek, K. Positive versus negative self-monitoring in the self-control of smoking. Journal of Consulting and Clinical Psychology, 1978, 46, 1148-1150.

Kazdin, A.E. Reactive self-monitoring: the effects of response desirability, goal setting, and feedback. Journal of Consulting and Clinical Psychology, 1974, 42, 704-716.

Kazlo, M.P. The effects of self-monitoring on the frequency aspects of study behavior (Doctoral dissertation, University of Maryland, 1975). Dissertation Abstracts International, 1976, 36a, 6476. (University Microfilms No. 76-8398).

Lipinski, D.P., Black, J.L., Nelson, R.O., & Ciminero, A.R. Influence of motivational variables on the reactivity and reliability of self-recording. Journal of Consulting and Clinical Psychology, 1975, 43, 637-646.

Lipinski, D.P., & Nelson, R.O. The reactivity and unreliability of self-recording. Journal of Consulting and Clinical Psychology, 1974, 42, 118-123.

Locke, E.A. Cartledge, N., & Koeppel, J. Motivational effects of knowledge of results: A goal-setting phenomenon? Psychological Bulletin, 1968, 70, 474-485.

Mahoney, M.J., Moore, B.S., Wade, T.C., & Moura, N.G.M. The effects of continuous and intermittent self-monitoring on academic behavior. Journal of Consulting and Clinical Psychology, 1973, 41, 65-69.

McFall, R.M. The effects of self-monitoring on normal smoking behavior. Journal of Consulting and Clinical Psychology, 1970, 35, 135-142.

McFall, R.M., & Hammen, C.L. Motivation, structure, and self-monitoring: Role of non specific factors in smoking reduction. Journal of Consulting and Clinical Psychology, 1971, 37, 80-86.

McNamara, J.R. The use of self-monitoring techniques to treat nail biting. Behavior Research and Therapy, 1972, 10, 193-194.

Olson, K.A. An experimental analysis of self-reinforcement and two approaches to modifying study behavior: Self-monitoring and self-modeling (Doctoral dissertation, University of Wyoming, 1974). Dissertation Abstracts International, 1975, 35B, 3591. (University Microfilms No. 75-231).

Richards, C.S. Behavior modification of studying through study skills advice and self-control procedures. Journal of Counseling Psychology, 1975, 22, 431-436.

Richards, C.S., McReynolds, W.T., Holt, S., & Sexton, T. Effects of information feedback and self-administered consequences on self-monitoring study behavior. Journal of Counseling Psychology, 1976, 23, 316-321.

TABLE 1

PROFILE ANOVA FOR FOUR WEEKLY

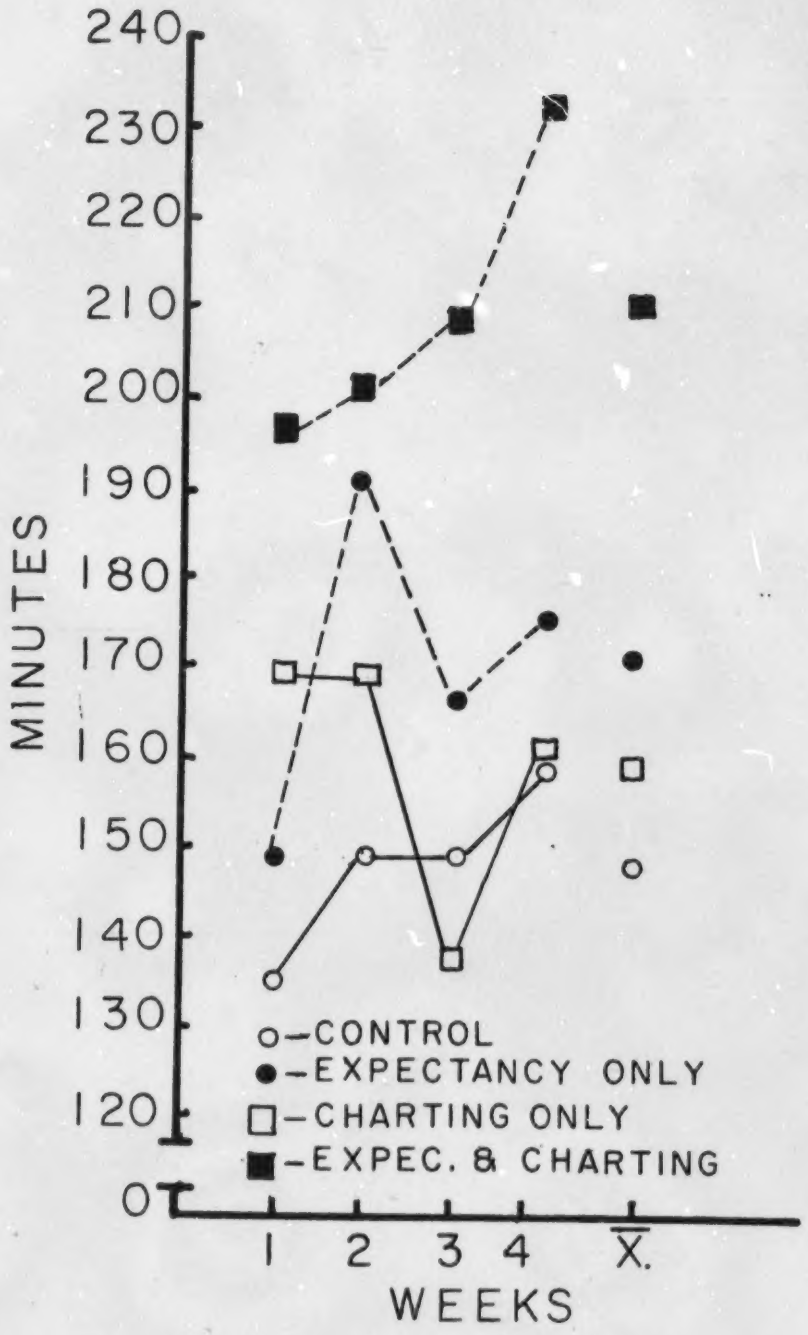
STUDY-TIME TOTALS

Source	ss	df	ms	F	p
Charting (A)	27824.086	1	27874.086	1.741	.195
Expectation (B)	63502.328	1	63502.328	3.966	.053
A x B	8844.652	1	8844.652	.552	.462
*unit	672428.250	42	16010.195		
Weeks (C)	11657.094	3	3885.698	1.766	.158
A x C	5449,684	3	1816.561	.826	.483
B x C	4108.047	3	1369.349	.622	
A x B x C	8627.582	3	2875.861	1.307	.276
*weeks x unit	277212.500	126	2200.099		
	1079703.000	183	5900.016		

*effect used in testing preceding effects

Figure Caption

Figure 1 Mean daily study times for each week (plus grand mean)


240
230
220
210
200
190
180
170
160
150
140
130
120
0
MINUTES
○—CONTROL
●—EXPECTANCY ONLY
□—CHARTING ONLY
■—EXPEC. & CHARTING
1 2 3 4 X̄
WEEKS